

W. E. DELANO.
TOOL FOR LATHES, PLANERS, &c.
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937,775.

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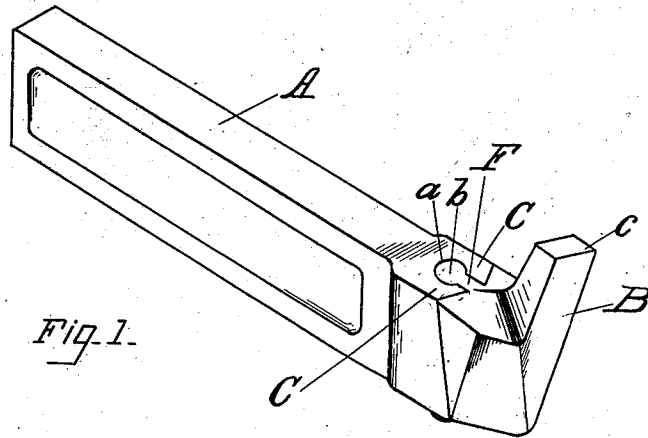


Fig. 1.

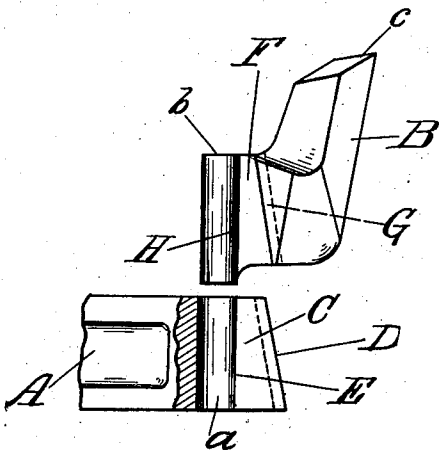


Fig. 2.

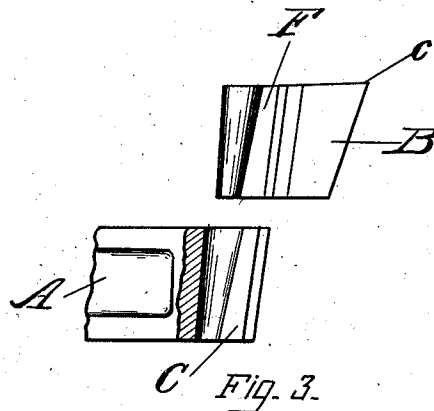


Fig. 3.

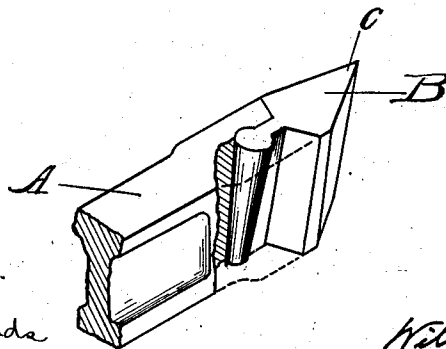


Fig. 4.

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TOOL FOR LATHES, PLANERS, &c.

937,775.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM E. DELANO, a citizen of the United States, residing at Somerville, in the county of Middlesex and Commonwealth of Massachusetts, have invented certain Improvements in Tools for Lathes, Planers, &c., of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to tools having separable holders and tool-points, and is designed particularly to provide a tool consisting of a holder, adaptable to be secured on a lathe, planer, shaper, or analogous machine, and a readily removable tool-point rigidly supported by the holder.

Any lathe or planer tool should properly possess two principal qualifications; to wit, the tool as a whole should have the greatest possible rigidity, and the point of the tool should be of such material as to receive and maintain a sharp and durable cutting edge. An integral tool-point and holder might seem best to exhibit these qualifications but there are many advantages of economy and utility, well recognized in the art, to be gained from making the holder and tool-point separate. While it has been known to be desirable to make the tool of separable parts it has been found that by so doing either the essential rigidity of the tool has been sacrificed or the fixation of one part of the tool on the other has involved such intricate devices, intended to preserve rigidity, as to negative in a great degree many of the advantages of convenience sought to be secured.

The present invention preserves the rigidity of the tool and at the same time provides for an association of the holder and tool-point such that they may be assembled or separated with the greatest facility.

The objects of the invention are best secured by providing a wedge carried by one of the separable parts to coöperate with wedge-engaging means on the other part, the wedge being so engaged therein that the reactionary impulse of the work, when the tool is in use, tends constantly to force the wedge more firmly into association with the wedge-engaging means. In this manner the same reactionary impulse which must be resisted by the rigidity of the tool serves to increase

said rigidity and maintain it at its maximum.

When the parts are first assembled by hand and the tool is first introduced to its work, it is probable that the connection between the parts will not be sufficiently intimate to supply the desired rigidity to the tool, but the immediate tendency of the work is to force the co-acting devices on the respective parts into closer engagement, and as a result, some slight relative movement of the parts may occur in a manner which substantially increases the rigidity of the tool. When, however, the work has forced the parts into their final relative positions, the coöperation of the wedge and wedge-engaging means is highly effective to prevent appreciable relative motion, of the parts of the tool, until it is desired to separate them; that is to say, every tendency of the various forces normally acting upon the tool is to prevent relative movement of the parts, except into closer engagement, but when it is desired to separate the parts the operator has only to apply force in a predetermined direction different from that of any usual force, and the separation is easily affected.

In the drawings, Figure 1 is a perspective of a preferred form of tool; Fig. 2 is a vertical central section lengthwise of the holder, showing the tool-point about to be engaged therewith; Fig. 3 is a view similar to Fig. 2, showing a modified form; Fig. 4 is a perspective, partially in section, of the modification shown in Fig. 3.

The tool has two unitary parts, a holder A and a tool-point B. These parts may be of any desired form suitable for a tool, and it is to be understood that the forms shown in the drawings are merely for purposes of illustration.

This invention relates alone to the means whereby the parts of a tool are connected and it is not to be limited in its application to any particular species of tool.

The embodiment of the invention shown in Figs. 1 and 2 will be first described, all discussion of possible modifications being postponed until after this specific construction has been explained. The holder A, as shown in Figs. 1 and 2, is primarily intended to be applied in the usual manner to a lathe or like machine and accordingly is given the desired form to suit that purpose. At one end the holder is bifurcated to

form two wedge-carrying arms C. The wedges carried by these arms are conveniently supplied by forming the end face of each of the wedge-carrying arms C oblique to the vertical to constitute a wedge face D (see Fig. 2), and by recessing the inner face of each wedge-carrying arm C to provide a wedge face E. As shown in the drawings, the recessed inner faces of the wedge-carrying arms C are conveniently in the form of a cylindrical aperture *a*, open on one side and extending through the holder from top to bottom. In this manner two pairs of cooperating wedge faces are provided. These pairs of wedge faces, when the tool is assembled, are engaged, respectively, by two pairs of cooperating shoulders carried by the tool-point B. These shoulders are conveniently supplied upon a projecting neck F. A face of the tool-point, adjacent to the neck F, constitutes a shoulder G, while an enlargement upon the extremity of the neck provides another shoulder H. As shown in the drawings the shoulder H consists of a portion of the surface of a cylindrical head *b* carried by the neck F. This is a convenient form since this cylindrical head may be arranged to fit within the cylindrical aperture of the holder. When it is desired to assemble the parts of the tool they are placed in the relative positions shown in Fig. 2, the tool-point B is moved downwardly toward the holder and the upper extremities of the two wedge faces D, E are embraced between the shoulders G and H. Progressing farther the wedges will become firmly seated between the shoulders G and H and when the cutting edge *c* is applied to the work the reactionary impulse thereof will tend constantly to drive the shoulders into still more secure and rigid engagement with the wedge faces. Primarily the wedge faces D are intended to serve only the above-described purposes; but it is also desirable to incline the two faces D backwardly from the inner walls of the arms C, and to have the shoulders G carried by the tool-point B correspondingly inclined. In this manner the shoulders G straddle or embrace the ends of the arms C and resist any tendency to spread apart which they may have. In like manner the shoulders G exert a pressure, when the tool is in use, on the ends of the arms C and thereby tend to force said arms together and to prevent them from spreading so as to loosen the association between the holder and tool-point (see Fig. 1).

As shown in Figs. 1 and 2 the shoulder H and the corresponding wedge face E are substantially vertical while the shoulder G and corresponding wedge face D are oblique and disposed across the path by which the reactionary impulse of the work is transmitted through the tool-point to the holder.

With this arrangement the shoulders are able to support directly upon their surfaces a great part of the reactionary impulse of the work. It is obvious, however, that the face D and shoulder G might be either vertical or inclined in some other direction from that shown in the drawings, while the face E and shoulder H would occupy correspondingly changed positions. It is convenient to provide a projecting lug on the lower end of the head *b*, said lug extending below the lower surface of the holder when the tool is assembled, in order that the co-acting parts may be separated by striking the lug a sharp blow with a hammer to loosen their engagement, and then merely drawing one part away from the other.

Various modifications of the embodiment of this invention which has just been described could be made without departing from the proper field of this invention. For example, Figs. 3 and 4 show a form wherein one of the separable parts of the tool carries two wedges similar to those already described, while the other part carries, in addition to the above described wedge-engaging shoulders, another wedge which is adapted to be engaged by wedge-engaging means on the first part. A convenient way to effect this arrangement is to give the enlarged head of the neck F a frusto-conical form and arrange it to be seated in a correspondingly shaped aperture formed by the recessed inner faces of the wedge-carrying arms C. In addition to the modification above indicated, the tool shown in Figs. 3 and 4 also illustrates the above-suggested changes in the angular relations of the wedge-engaging shoulders and the wedge faces. The tool-point shown in Figs. 3 and 4 is a different sort from that shown in Figs. 1 and 2 in order to illustrate which is already obvious, that any sort of tool may be used with any sort of holder in the embodiment of this invention.

It is to be noted that the tool-point, instead of the holder, might be bifurcated to supply the wedge-carrying arms, and the holder might be provided with a neck to support the wedge-engaging shoulders. If this were done the arrangement as shown in Fig. 1 would preferably be inverted and what is there shown as the holder would become a tool-point, and the tool-point would become a holder. This is equally true of the arrangement shown in Figs. 3 and 4.

It is evident that one or more wedge faces or cooperating wedge-engaging shoulders could be omitted without destroying the utility of the other co-acting parts. For example, the head *b* at the end of the neck F could be made semi-cylindrical so as to supply a shoulder H on one side only of the neck. In this manner only one of the wedges would be effective to perform its in-

tended office, but, nevertheless, the tool would be entirely practicable.

The above-suggested modifications are only a few of the obvious changes which may be made in the specific construction of a tool which has been shown and described.

It is to be understood that the scope of this invention is not limited to the precise construction shown and the particular modifications suggested by way of exemplification.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent is:

1. A tool having, in combination, separable parts; wedge-carrying arms on one of said parts; a pair of cooperating wedge faces on each of said arms; pairs of shoulders on the other part arranged to engage said pairs of wedge faces respectively, two shoulders of different pairs cooperating to straddle the ends of the wedge-carrying arms.

2. A tool having, in combination, separable parts; spaced arms on one of said parts; a wedge on one of said arms; wedge-engaging means on the other part cooperating with said wedge and interlocking between said spaced arms; and wedge faces on the wedge inclined to each other whereby when the tool is in use the action of the work tends to draw the parts intimately together.

3. A tool having, in combination, separa-

ble parts; spaced arms on one part; an extension on the other part arranged to be received between said spaced arms whereby relative lateral movement of the parts in either direction is prevented; wedge faces on one of said arms; and wedge-engaging means on said extension to cooperate with said wedge.

4. A tool for lathes, planers, etc., consisting of two detachable parts; a neck on one part locking between spaced arms on the other part; inwardly inclined faces on the neck carrying part, which embrace correspondingly inclined cooperating faces on the spaced arms, whereby the action of the work tends to force said arms together.

5. A tool for lathes, planers, etc., consisting of two detachable parts shaped to fit together with a wedging action; spaced arms on one part; a neck on the other part fitting between said arms; backwardly inclined faces on the outside of the spaced arms; and correspondingly inclined cooperating faces on the neck carrying part, whereby the spreading of said spaced arms is prevented.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM E. DELANO.

Witnesses:

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